```
cgggagtaaa acctgttgtc gatccctcag cttccagctt gcggcttgct gagtggccac     60
cttctttccg gtccccggag ctgcggggaa agatggaacg gcaccagccg cggctgcacc    120
acccggccca aggctcagcc gctgggactc cctacccttc ctcagcctct ctccgcggct    180
gccgggaaag caagatgccg cgcaggaagg gcccccaaca ccctccgccg cccagtggcc    240
ccgaggagcc tggggagaag cgccccaagt ttcatttaaa tattaggaca ctgacggatg    300
atatgctgga caaatttgcc agcataagaa ttccagggag caagaaagag agacctccac    360
ttcccaacct gaagactgca tttgcaagca gtgattgctc agcagcacct ttagagatga    420
tggagaactt tccaaagcca ctgtcagaga atgaactctt agaacttttt gaaaaaatga    480
tggaagatat gaatttaaat gaagataaaa aggcaccatt gcgggaaaag gacttcagta    540
tcaaaaaaga aatggtgatg cagtacatta atactgcttc taagacagga agtcttaaga    600
gaagccgaca gatctcacct caggaattca ttcatgagct gaaaatgggg tctgcagatg    660
agagacttgt cacatgcctg gagtctctcc gagtgtcttt gaccagcaat cctgtgagtt    720
gggtggaaag ctttggacat gaagggcttg gattattatt agacattttg gaaaaactga    780
ttagtggaaa aatccaagaa aaagttgtaa agaaaaatca acataaagtc atacagtgtc    840
taaaagccct gatgaatacg cagtatggct tggaaagaat tatgagtgag gagaggagcc    900
tttccttatt ggccaaagcc gtggatccca gacaccccaa tatgatgaca gatgtggtta    960
aacttctctc tgcggtatgc attgtagggg aagaaagcat ccttgaagaa gttttagaag   1020
ctttaacttc agctggtgaa gaaaaaaaaa ttgacagatt tttttgtatt gtggaaggcc   1080
tccggcacaa ttcagttcaa ctgcaagtag cttgtatgca gctcatcaat gccctggtta   1140
catctcctga tgatttggat ttcaggcttc acatcagaaa tgaatttatg cgttgtggat   1200
tgaaagagat attgccaaat ttaaaatgca ttaagaatga tggcctggat atccaactta   1260
aagtctttga tgagcataaa gaagaagatt tgtttgagtt atcccatcgc cttgaagata   1320
ttagagctga acttgatgaa gcatatgatg tttacaacat ggtgtggagc acagttaaag   1380
aaactagagc agagggatat tttatttcta ttcttcagca tcttttgctg attcgaaatg   1440
attattttat aaggcaacaa tacttcaaat taattgatga gtgtgtatcc cagattgtat   1500
tgcatagaga tggaatggat ccagacttca catatcgaaa aagactagat ttagatttaa   1560
cccagtttgt agacatttgc atagatcaag caaaactaga agagtttgaa gagaaagcat   1620
cagaacttta caagaaattt gaaaaagagt ttaccgacca ccaagaaact caggctgaat   1680
tgcagaaaaa agaggcaaag attaatgagc ttcaagcaga gctacaagct tttaagtctc   1740
agtttggtgc cttgccagct gattgtaata ttcctttgcc tccctctaaa gaaggtggaa   1800
ctggccactc agcacttcct cctccgcctc cactgccttc tggtggaggg gtgccgcctc   1860
cacctcctcc cccaccacct cctccacttc caggaatgcg gatgccattc agtggtcctg   1920
tgcctccacc acctcccctg ggattccttg gaggacaaaa ttctcctcct ctaccaatcc   1980
tgccatttgg gttgaaacca aagaaagaat ttaaacctga aatcagcatg agaagattga   2040
attggttaaa gatcagacct catgaaatga ctgaaaactg tttctggata aaagtaaatg   2100
aaaataagta tgaaaacgtg gatttgcttt gtaaacttga gaatacattt tgttgccaac   2160
aaaaagagag aagagaagag gaagatattg aagagaagaa atcgattaag aaaaaaatta   2220
aagaacttaa gtttttagat tctaaaattg cccagaacct ttcaatcttc ctgagctctt   2280
ttcgggtgcc atatgaggaa atcagaatga tgatattgga agtagatgaa acacggttgg   2340
cagagtctat gattcagaac ttaataaagc atcttcctga tcaagagcaa ttaaattcat   2400
tgtctcagtt caagagtgaa tatagcaact tatgtgaacc tgagcagttt gtggttgtga   2460
tgagcaatgt gaagagacta cggccacggc tcagtgctat tctctttaag cttcagtttg   2520
aagagcaggt gaacaacatc aaacctgaca tcatggctgt cagtactgcc tgcgaagaga   2580
taaagaagag caaaagcttt agcaagttgc tggaacttgt attgctaatg ggaaactaca   2640
tgaatgctgg ctcccggaat gctcaaacct tcggatttaa ccttagctct ctctgtaaac   2700
taaaggacac aaaatcagca gatcagaaaa caacgctact tcatttcctg gtagaaatat   2760
gtgaagagaa gtaccctgat atactgaatt ttgtggatga tttggaacct ttagacaaag   2820
ctagtaaagt ctctgtagaa acgctggaaa agaatttgag gcagatggga aggcagcttc   2880
aacagcttga gaaggaattg gaaacctttc cccctcctga ggacttgcat gacaagtttg   2940
tgacaaagat gtccagattt gttatcagtg caaaagaaca atatgagaca ctttcgaagt   3000
tacacgaaaa catggaaaag ttataccaga gtataatagg atactatgcc attgatgtga   3060
agaaggtgtc tgtggaagac tttcttactg acctgaataa cttcagaacc acattcatgc   3120
aagcaataaa ggagaatatc aaaaaaagag aagcagagga aaaagaaaaa cgtgtcagaa   3180
tagctaaaga attagcagag cgagaaagac tcgaacgcca acaaaagaaa aagcgtttat   3240
tagaaatgaa gactgagggt gatgagacag gagtgatgga taatctgctg gaggccttgc   3300
agtccggggc tgccttccgc gacagaagaa aaaggacacc gatgccaaaa gatgttcggc   3360
```

FIG. 1A

```
agagtctcag tccaatgtct cagaggcctg ttctgaaagt ttgtaaccat gaaaatcaga   3420
aagtgcagtt aacagaaggg tcacgttcac actacaatat caattgcaac tcaacaagga   3480
ctccagtcgc caaggagctt aattataatc tagacactca tacgtctact agggaggatc   3540
aaggcagctg agaagaagga agcgtgtaat gtagaaagca acagaaaaaa ggaaacggaa   3600
cttcttggct ctttttctaa aaatgaatca gttcccgaag ttgaagccct gctggcaaga   3660
ttacgagctt tataagttaa actggttttt aaaaaaatga ttaagccaaa tataaagcca   3720
tgctctaaac tatacccttg aaaaaattgc tttatgtaag tgacttatat agtttaaatt   3780
atgatatata tagaaaaata aagctaaata tatgattgca atgcttttct atgtactgga   3840
ggttttggtt attcaagatt gtaccggctt aatccttttt ttttttttgt ctcctggtat   3900
tcctcagttc tttatttggt ggttaaatta tacatattgc tttagagagc aggtaggtgg   3960
ccatgtgttc agcagtgtgt ccttaagaaa ataccatctt tctaagccac tggaattttt   4020
actttactat ttttaacatt aatggatgtc aggtcatcaa cctcaagtct ttacatatcc   4080
atgtatattc catatatatt gtttatatag gcccaagttt ctccttaatt gggatctata   4140
tactaccagc acaacatcaa aaacatgtaa ttgaatacat cagagctata tatgtaagga   4200
aatgactggt gaccccatta tcatcattgt tgaattcatg ttaagtagac cctctagggg   4260
accataaggc aattgagcac ataacgaaaa atgatgcaat aagaatgtat gcactctctt   4320
tgccaaatgc a                                                       4331
```

FIG. 1B

```
tacccttcctcagcctctctccgcggctgccgggaaagcaagatgccgcgcaggaagggc  120
Y  P  S  S  A  S  L  R  G  C  R  E  S  K  M  P  R  R  K  G

ccccaacaccctccgccgcccagtggccccgaggagcctggggagaagcgccccaagttt  180
P  Q  H  P  P  P  P  S  G  P  E  E  P  G  E  K  R  P  K  F

catttaaatattaggacactgacggatgatatgctggacaaatttgccagcataagaatt  240
H  L  N  I  R  T  L  T  D  D  M  L  D  K  F  A  S  I  R  I

ccagggagcaagaaagagagacctccacttcccaacctgaagactgcatttgcaagcagt  300
P  G  S  K  K  E  R  P  P  L  P  N  L  K  T  A  F  A  S  S

gattgctcagcagcacctttagagatgatggagaactttccaaagccactgtcagagaat  360
D  C  S  A  A  P  L  E  M  M  E  N  F  P  K  P  L  S  E  N

gaactcttagaacttttttgaaaaaatgatggaagatatgaatttaaatgaagataaaaag  420
E  L  L  E  L  F  E  K  M  M  E  D  M  N  L  N  E  D  K  K

gcaccattgcgggaaaaggacttcagtatcaaaaaagaaatggtgatgcagtacattaat  480
A  P  L  R  E  K  D  F  S  I  K  K  E  M  V  M  Q  Y  I  N

actgcttctaagacaggaagtcttaagagaagccgacagatctcacctcaggaattcatt  540
T  A  S  K  T  G  S  L  K  R  S  R  Q  I  S  P  Q  E  F  I

catgagctgaaaatggggtctgcagatgagagacttgtcacatgcctggagtctctccga  600
H  E  L  K  M  G  S  A  D  E  R  L  V  T  C  L  E  S  L  R

gtgtctttgaccagcaatcctgtgagttgggtggaaagctttggacatgaagggcttgga  660
V  S  L  T  S  N  P  V  S  W  V  E  S  F  G  H  E  G  L  G

ttattattagacattttggaaaaactgattagtggaaaaatccaagaaaaagttgtaaag  720
L  L  L  D  I  L  E  K  L  I  S  G  K  I  Q  E  K  V  V  K

aaaaatcaacataaagtcatacagtgtctaaaagccctgatgaatacgcagtatggcttg  780
K  N  Q  H  K  V  I  Q  C  L  K  A  L  M  N  T  Q  Y  G  L

gaaagaattatgagtgaggagaggagcctttccttattggccaaagccgtggatcccaga  840
E  R  I  M  S  E  E  R  S  L  S  L  L  A  K  A  V  D  P  R

caccccaatatgatgacagatgtggttaaacttctctctgcggtatgcattgtaggggaa  900
H  P  N  M  M  T  D  V  V  K  L  L  S  A  V  C  I  V  G  E

gaaagcatccttgaagaagttttagaagctttaacttcagctggtgaagaaaaaaaaatt  960
E  S  I  L  E  E  V  L  E  A  L  T  S  A  G  E  E  K  K  I

gacagatttttttgtattgtggaaggcctccggcacaattcagttcaactgcaagtagct  1020
D  R  F  F  C  I  V  E  G  L  R  H  N  S  V  Q  L  Q  V  A

tgtatgcagctcatcaatgccctggttacatctcctgatgatttggatttcaggcttcac  1080
C  M  Q  L  I  N  A  L  V  T  S  P  D  D  L  D  F  R  L  H

atcagaaatgaatttatgcgttgtggattgaaagagatattgccaaatttaaaatgcatt  1140
I  R  N  E  F  M  R  C  G  L  K  E  I  L  P  N  L  K  C  I

aagaatgatggcctggatatccaacttaaagtctttgatgagcataaagaagaagatttg  1200
K  N  D  G  L  D  I  Q  L  K  V  F  D  E  H  K  E  E  D  L
```

FIG. 2A

```
tttgagttatcccatcgccttgaagatattagagctgaacttgatgaagcatatgatgtt  1260
F  E  L  S  H  R  L  E  D  I  R  A  E  L  D  E  A  Y  D  V

tacaacatggtgtggagcacagttaaagaaactagagcagagggatattttatttctatt  1320
Y  N  M  V  W  S  T  V  K  E  T  R  A  E  G  Y  F  I  S  I

cttcagcatcttttgctgattcgaaatgattattttataaggcaacaatacttcaaatta  1380
L  Q  H  L  L  L  I  R  N  D  Y  F  I  R  Q  Q  Y  F  K  L

attgatgagtgtgtatcccagattgtattgcatagagatggaatggatccagacttcaca  1440
I  D  E  C  V  S  Q  I  V  L  H  R  D  G  M  D  P  D  F  T

tatcgaaaaagactagatttagatttaacccagtttgtagacatttgcatagatcaagca  1500
Y  R  K  R  L  D  L  D  L  T  Q  F  V  D  I  C  I  D  Q  A

aaactagaagagtttgaagagaaagcatcagaactttacaagaaatttgaaaaagagttt  1560
K  L  E  E  F  E  E  K  A  S  E  L  Y  K  K  F  E  K  E  F

accgaccaccaagaaactcaggctgaattgcagaaaaaagaggcaaagattaatgagctt  1620
T  D  H  Q  E  T  Q  A  E  L  Q  K  K  E  A  K  I  N  E  L

caagcagagctacaagcttttaagtctcagtttggtgccttgccagctgattgtaatatt  1680
Q  A  E  L  Q  A  F  K  S  Q  F  G  A  L  P  A  D  C  N  I

cctttgcctccctctaaagaaggtggaactggccactcagcacttcctcctccgcctcca  1740
P  L  P  P  S  K  E  G  G  T  G  H  S  A  L  P  P  P  P  P

ctgccttctggtggaggggtgccgcctccacctcctcccccaccacctcctccacttcca  1800
L  P  S  G  G  G  V  P  P  P  P  P  P  P  P  P  P  P  L  P

ggaatgcggatgccattcagtggtcctgtgcctccaccacctcccctgggattccttgga  1860
G  M  R  M  P  F  S  G  P  V  P  P  P  P  P  L  G  F  L  G

ggacaaaattctcctcctctaccaatcctgccatttgggttgaaaccaaagaaagaattt  1920
G  Q  N  S  P  P  L  P  I  L  P  F  G  L  K  P  K  K  E  F

aaacctgaaatcagcatgagaagattgaattggttaaagatcagacctcatgaaatgact  1980
K  P  E  I  S  M  R  R  L  N  W  L  K  I  R  P  H  E  M  T

gaaaactgtttctggataaaagtaaatgaaaataagtatgaaaacgtggatttgctttgt  2040
E  N  C  F  W  I  K  V  N  E  N  K  Y  E  N  V  D  L  L  C

aaacttgagaatacattttgttgccaacaaaaagagagaagagaagaggaagatattgaa  2100
K  L  E  N  T  F  C  C  Q  Q  K  E  R  R  E  E  E  D  I  E

gagaagaaatcgattaagaaaaaaattaaagaacttaagtttttagattctaaaattgcc  2160
E  K  K  S  I  K  K  K  I  K  E  L  K  F  L  D  S  K  I  A

cagaacctttcaatcttcctgagctcttttcgggtgccatatgaggaaatcagaatgatg  2220
Q  N  L  S  I  F  L  S  S  F  R  V  P  Y  E  E  I  R  M  M

atattggaagtagatgaaacacggttggcagagtctatgattcagaacttaataaagcat  2280
I  L  E  V  D  E  T  R  L  A  E  S  M  I  Q  N  L  I  K  H

cttcctgatcaagagcaattaaattcattgtctcagttcaagagtgaatatagcaactta  2340
L  P  D  Q  E  Q  L  N  S  L  S  Q  F  K  S  E  Y  S  N  L
```

FIG. 2B

```
tgtgaacctgagcagtttgtggttgtgatgagcaatgtgaagagactacggccacggctc  2400
C  E  P  E  Q  F  V  V  V  M  S  N  V  K  R  L  R  P  R  L

agtgctattctctttaagcttcagtttgaagagcaggtgaacaacatcaaacctgacatc  2460
S  A  I  L  F  K  L  Q  F  E  E  Q  V  N  N  I  K  P  D  I

atggctgtcagtactgcctgcgaagagataaagaagagcaaaagctttagcaagttgctg  2520
M  A  V  S  T  A  C  E  E  I  K  K  S  K  S  F  S  K  L  L

gaacttgtattgctaatgggaaactacatgaatgctggctcccggaatgctcaaaccttc  2580
E  L  V  L  L  M  G  N  Y  M  N  A  G  S  R  N  A  Q  T  F

ggatttaaccttagctctctctgtaaactaaaggacacaaaatcagcagatcagaaaaca  2640
G  F  N  L  S  S  L  C  K  L  K  D  T  K  S  A  D  Q  K  T

acgctacttcatttcctggtagaaatatgtgaagagaagtaccctgatatactgaatttt  2700
T  L  L  H  F  L  V  E  I  C  E  E  K  Y  P  D  I  L  N  F

gtggatgatttggaacctttagacaaagctagtaaagtctctgtagaaacgctggaaaag  2760
V  D  D  L  E  P  L  D  K  A  S  K  V  S  V  E  T  L  E  K

aatttgaggcagatgggaaggcagcttcaacagcttgagaaggaattggaaacctttccc  2820
N  L  R  Q  M  G  R  Q  L  Q  Q  L  E  K  E  L  E  T  F  P

cctcctgaggacttgcatgacaagtttgtgacaaagatgtccagatttgttatcagtgca  2880
P  P  E  D  L  H  D  K  F  V  T  K  M  S  R  F  V  I  S  A

aaagaacaatatgagacactttcgaagttacacgaaaacatggaaaagttataccagagt  2940
K  E  Q  Y  E  T  L  S  K  L  H  E  N  M  E  K  L  Y  Q  S

ataataggatactatgccattgatgtgaagaaggtgtctgtggaagactttcttactgac  3000
I  I  G  Y  Y  A  I  D  V  K  K  V  S  V  E  D  F  L  T  D

ctgaataacttcagaaccacattcatgcaagcaataaaggagaatatcaaaaaaagagaa  3060
L  N  N  F  R  T  T  F  M  Q  A  I  K  E  N  I  K  K  R  E

gcagaggaaaaagaaaaacgtgtcagaatagctaaagaattagcagagcgagaaagactc  3120
A  E  E  K  E  K  R  V  R  I  A  K  E  L  A  E  R  E  R  L

gaacgccaacaaaagaaaaagcgtttattagaaatgaagactgagggtgatgagacagga  3180
E  R  Q  Q  K  K  K  R  L  L  E  M  K  T  E  G  D  E  T  G

gtgatggataatctgctggaggccttgcagtccggggctgccttccgcgacagaagaaaa  3240
V  M  D  N  L  L  E  A  L  Q  S  G  A  A  F  R  D  R  R  K

aggacaccgatgccaaaagatgttcggcagagtctcagtccaatgtctcagaggcctgtt  3300
R  T  P  M  P  K  D  V  R  Q  S  L  S  P  M  S  Q  R  P  V

ctgaaagtttgtaaccatgaaaatcagaaagtgcagttaacagaagggtcacgttcacac  3360
L  K  V  C  N  H  E  N  Q  K  V  Q  L  T  E  G  S  R  S  H

tacaatatcaattgcaactcaacaaggactccagtcgccaaggagcttaattataatcta  3420
Y  N  I  N  C  N  S  T  R  T  P  V  A  K  E  L  N  Y  N  L

gacactcatacgtctactagggaggatcaaggcagctga                       3480
D  T  H  T  S  T  R  E  D  Q  G  S  *
```

FIG. 2C

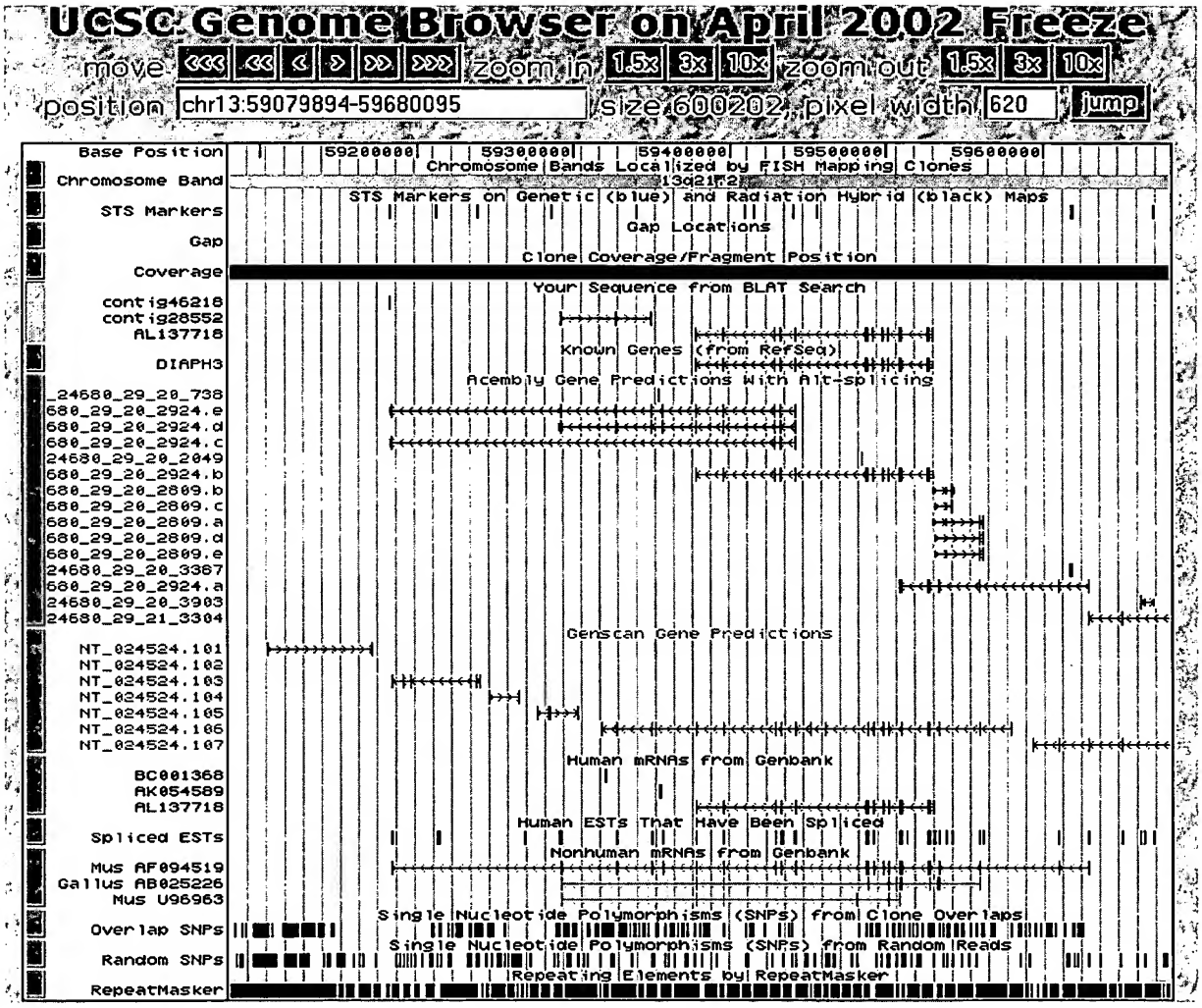
UCSC Genome Browser on April 2002 Freeze
move
zoom in
1.5x
3x
10x
zoom out
1.5x
3x
10x
position
chr13:59079894-59680095
size 600202 pixel width
620
jump
Base Position
59200000
59300000
59400000
59500000
59600000
Chromosome Band
Chromosome Bands Localized by FISH Mapping Clones
13q21.2
STS Markers
STS Markers on Genetic (blue) and Radiation Hybrid (black) Maps
Gap
Gap Locations
Coverage
Clone Coverage/Fragment Position
Your Sequence from BLAT Search
contig46218
contig28552
AL137718
DIAPH3
Known Genes (from RefSeq)
Acembly Gene Predictions With Alt-splicing
_24680_29_20_738
680_29_20_2924.e
680_29_20_2924.d
680_29_20_2924.c
24680_29_20_2049
680_29_20_2924.b
680_29_20_2809.b
680_29_20_2809.c
680_29_20_2809.a
680_29_20_2809.d
680_29_20_2809.e
24680_29_20_3387
680_29_20_2924.a
24680_29_20_3903
24680_29_21_3304
Genscan Gene Predictions
NT_024524.101
NT_024524.102
NT_024524.103
NT_024524.104
NT_024524.105
NT_024524.106
NT_024524.107
Human mRNAs from Genbank
BC001368
AK054589
AL137718
Human ESTs That Have Been Spliced
Spliced ESTs
Nonhuman mRNAs from Genbank
Mus AF094519
Gallus AB025226
Mus U96963
Single Nucleotide Polymorphisms (SNPs) from Clone Overlaps
Overlap SNPs
Single Nucleotide Polymorphisms (SNPs) from Random Reads
Random SNPs
Repeating Elements by RepeatMasker
RepeatMasker

FIG. 3

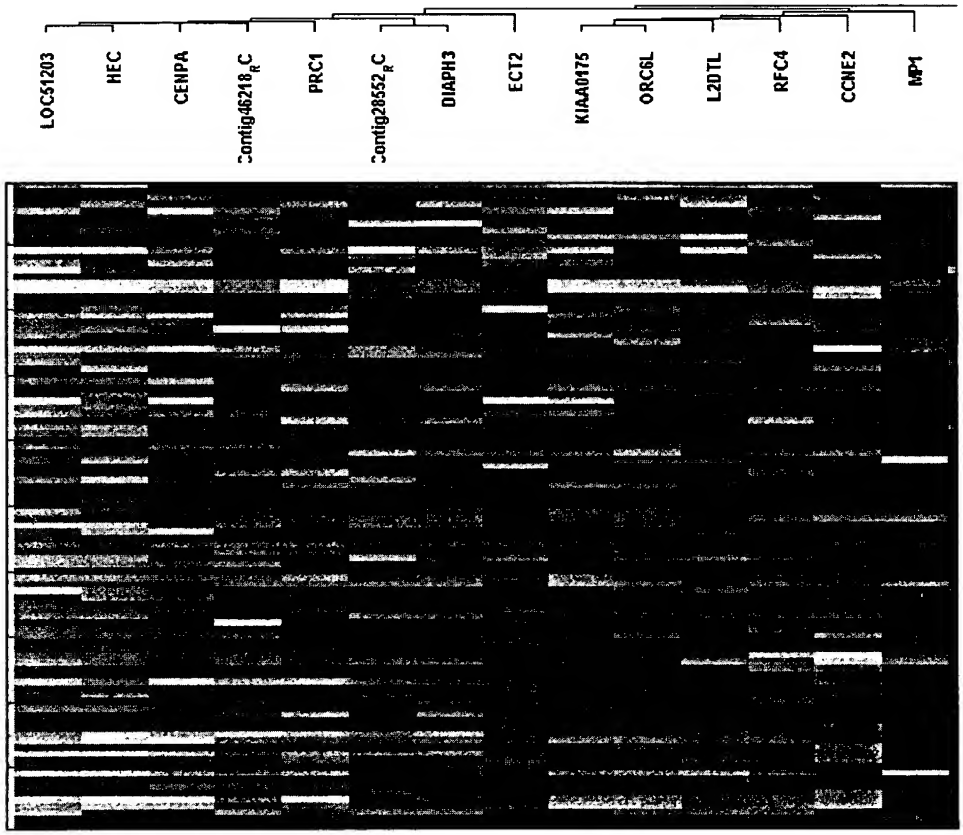
LOC51203
HEC
CENPA
Contig46218_RC
PRC1
Contig28552_RC
DIAPH3
ECT2
KIAA0175
ORC6L
L2DTL
RFC4
CCNE2
MP1

FIG. 4

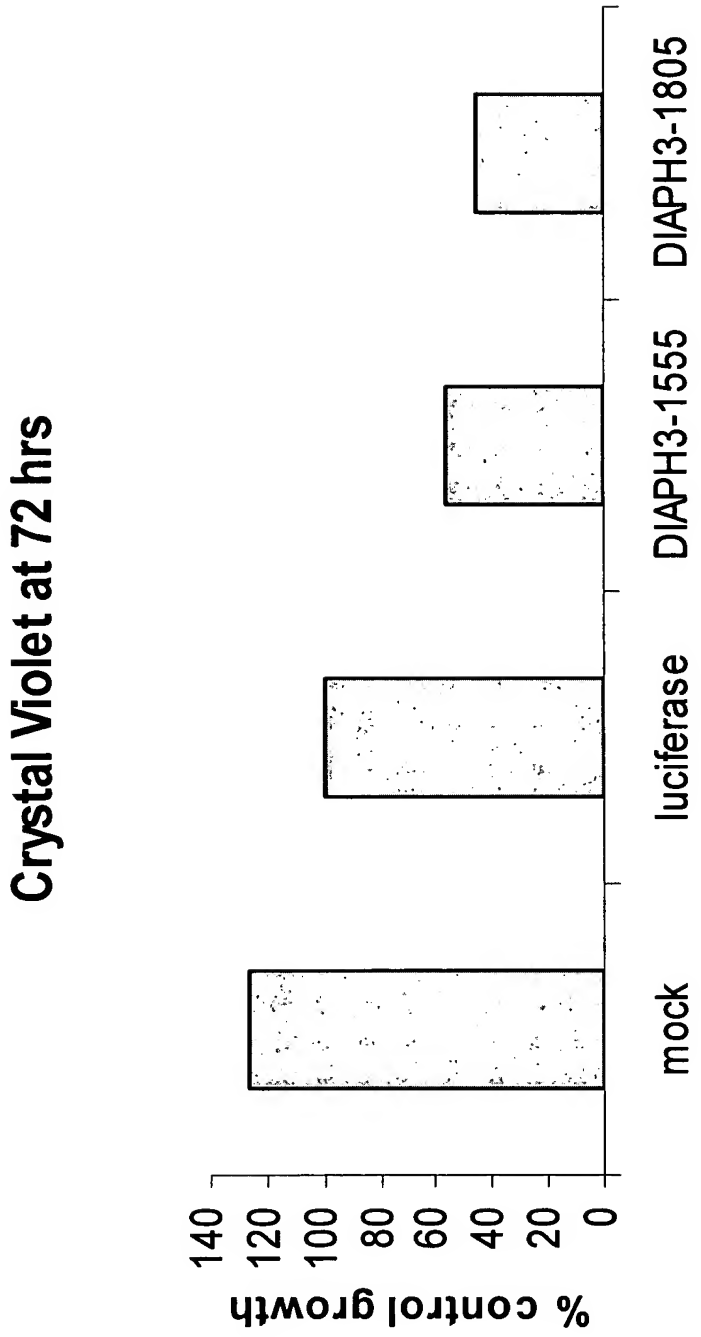
Crystal Violet at 72 hrs
% control growth
0
20
40
60
80
100
120
140
mock
luciferase
DIAPH3-1555
DIAPH3-1805
siRNAs

FIG. 5

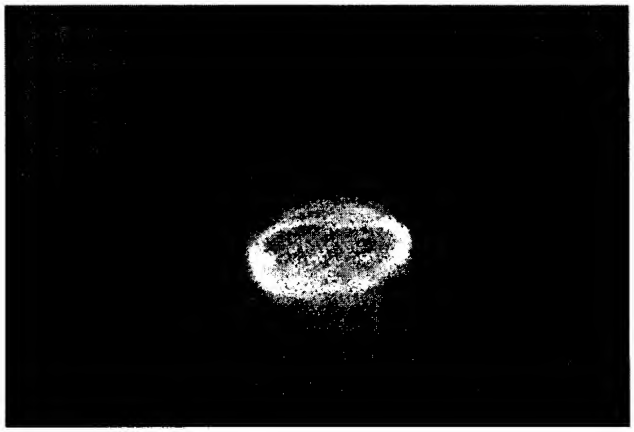

FIG. 6A

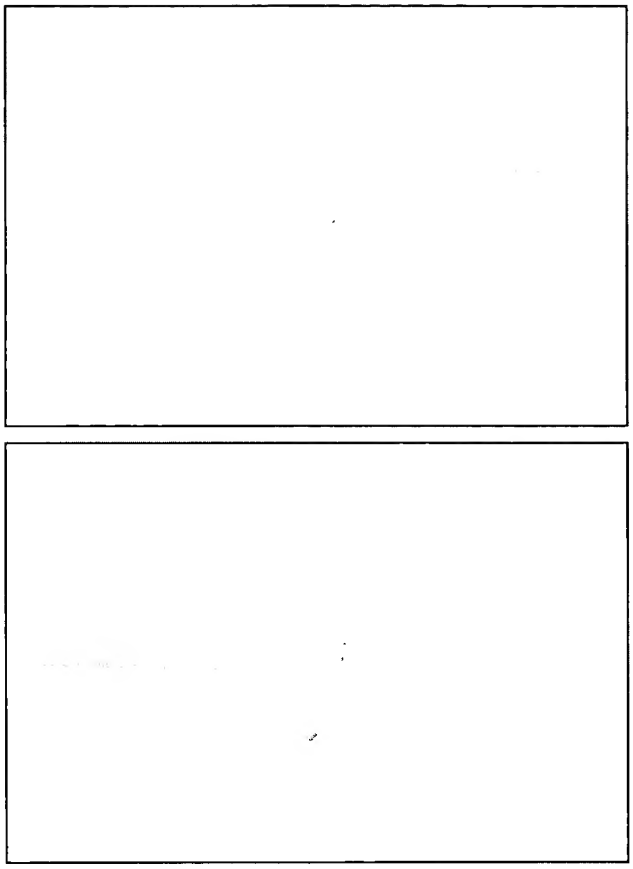

FIG. 6B

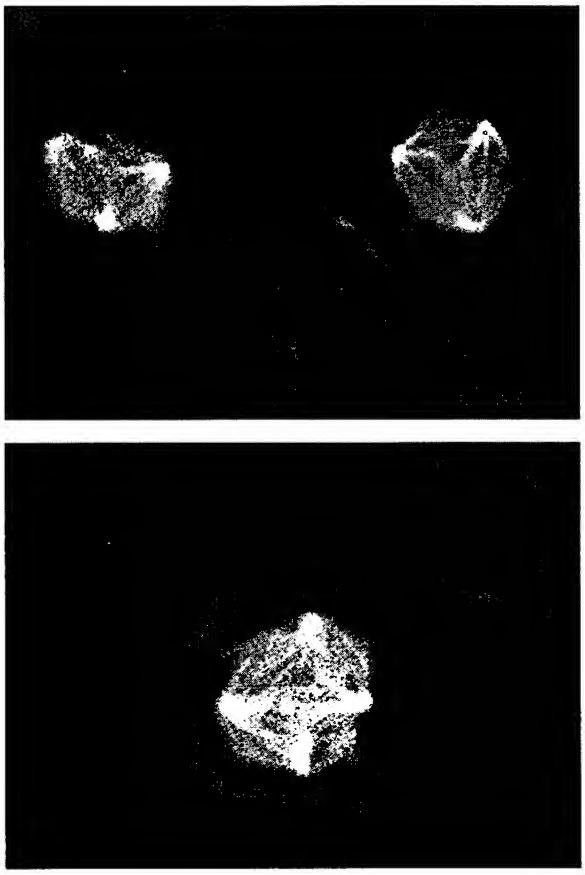

FIG. 6C

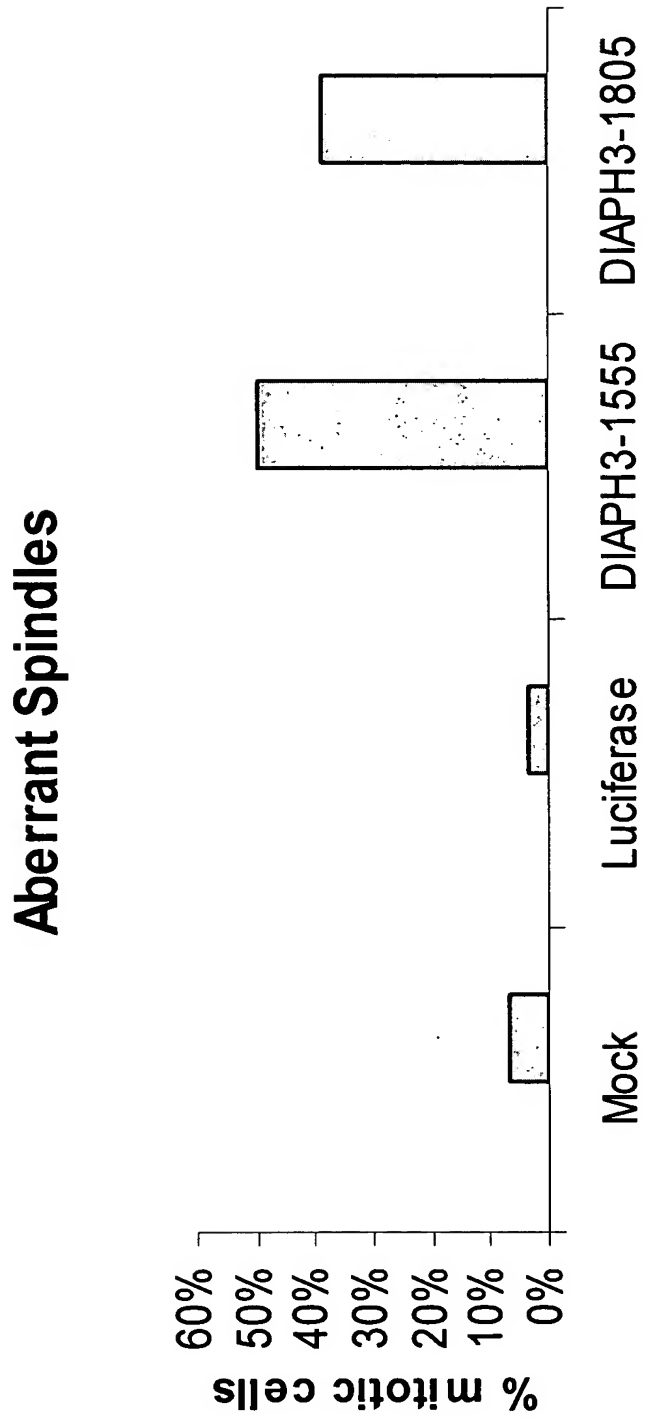
Aberrant Spindles
% mitotic cells
60%
50%
40%
30%
20%
10%
0%
Mock
Luciferase
DIAPH3-1555
DIAPH3-1805
siRNA

FIG. 7

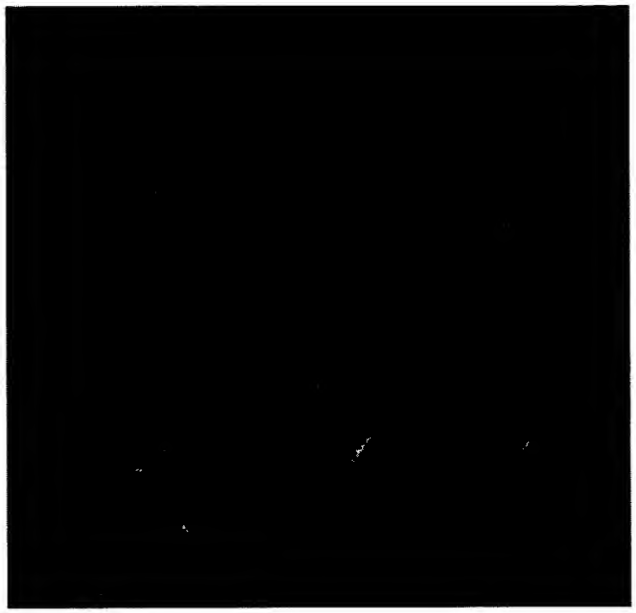

FIG. 8A

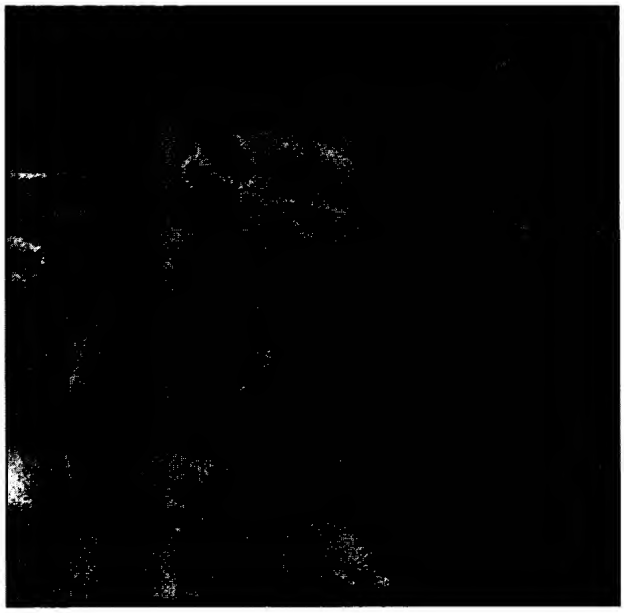

FIG. 8B

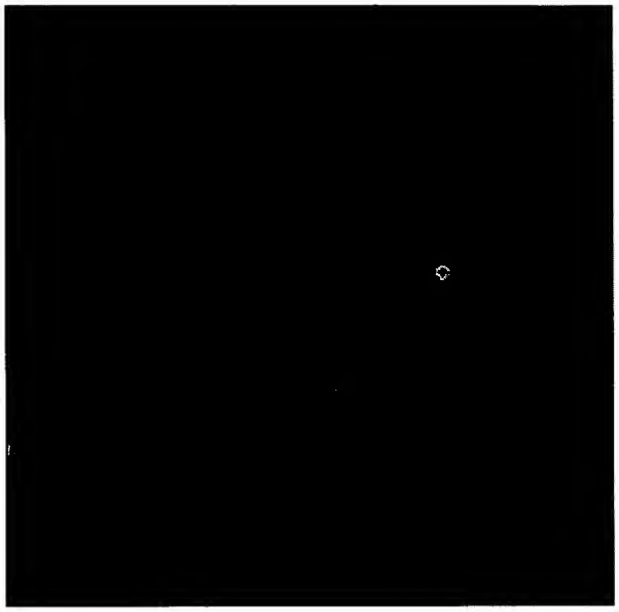

FIG. 8C

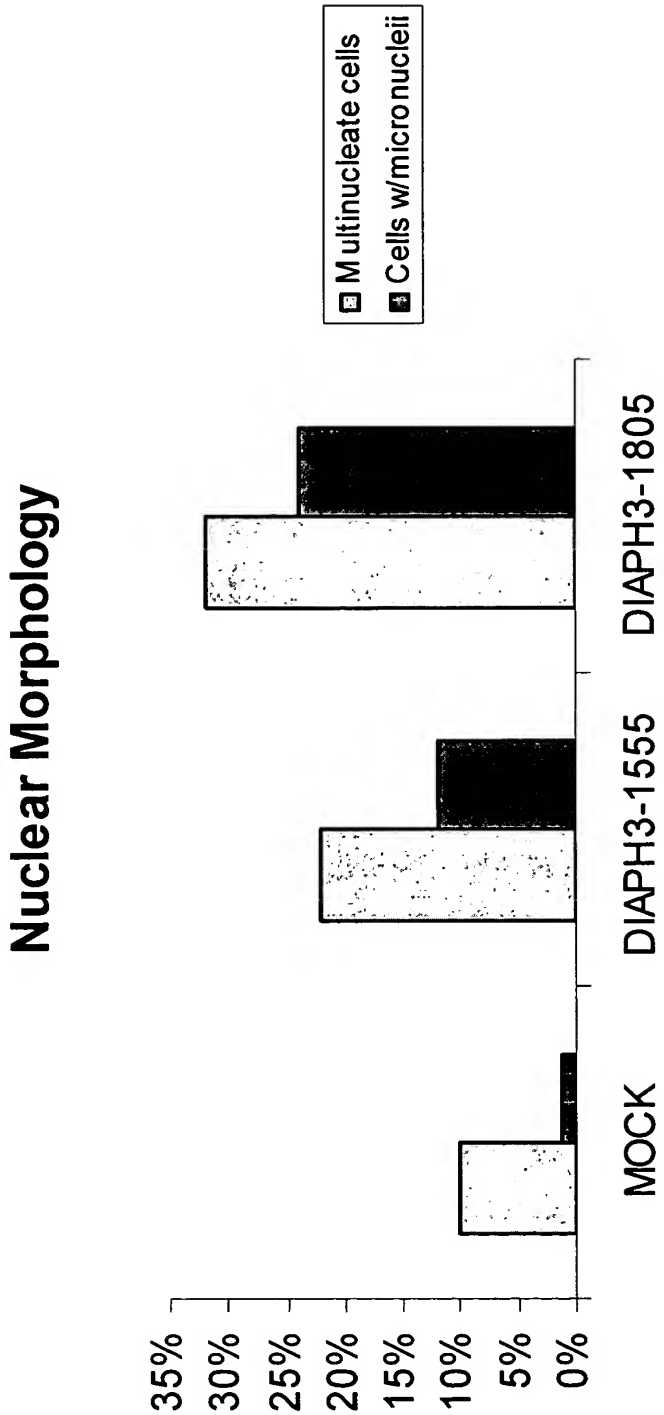
Nuclear Morphology
Multinucleate cells
Cells w/micronuclei
35%
30%
25%
20%
15%
10%
5%
0%
MOCK
DIAPH3-1555
DIAPH3-1805

FIG. 9